

A New Genus and Species of Boarfish (Perciformes: Pentacerotidae) from Western Australia

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Abstract

Parazanclistius hutchinsi gen. nov., sp. nov. is described from five examples taken from south-west Western Australia. The genus differs from the superficially similar *Zanclistius* Jordan, 1907, in the more anterior placement of the pelvic fin, possession of scales on the opercle and subopercle, more deeply concave dorsal snout profile, larger number of lateral line pores, and relatively longer pectoral fins.

Introduction

In the course of a revision of the Pentacerotidae (Hardy 1983), one example of a boarfish from Rottnest Island, Western Australia, was found to be quite different from other known species. Four further examples have since been examined, enabling a detailed description of the species to be made. Because of several significant differences between the species here described and the superficially similar Australasian species *Zanclistius elevatus* (Ramsay and Ogilby, 1888), the former is placed in a new genus, bringing to eight the number of genera for the family, and to five the number of pentacerotid species recorded from Western Australia.

Methods and Abbreviations

Measurements were taken following Hardy (1983). All specimens were X-rayed for vertebral and caudal ray counts.

The following abbreviations are used in the text: SL, standard length; HL, head length; N, number of specimens examined; NMNZ, National Museum of New Zealand, Wellington; WAM, Western Australian Museum, Perth.

Systematics

Parazanclistius gen. nov.

Type species: *Parazanclistius hutchinsi* sp. nov.

Diagnosis

A genus of pentacerotid fishes superficially resembling *Zanclistius*, but having the pelvic fin base anterior to the pectoral fin base, and well-developed scales on

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the opercle and subopercle. The pectoral fin of *Parazanclistius* is relatively longer than in *Zanclistius*, and the dorsal snout profile considerably more concave. In addition, *Parazanclistius* has a greater number of lateral line pores (66-72) than *Zanclistius* (55-65).

Description

See following description of *P. hutchinsi*.

Remarks

The description of *Parazanclistius* brings to 4 the number of genera, all monotypic, in the subfamily Histiopterinae (the other genera are *Evistias* Jordan, 1907, *Histiopterus* Temminck and Schlegel, 1844, and *Zanclistius* Jordan, 1907). This contrasts with the 4 remaining pentacerotid genera, which comprise 9 species. Recognition of such a degree of monotypicity in the histiopterine genera, reflects in my opinion their considerable morphological divergence. Table 1 demonstrates the discordant nature of shared characters in these genera. That these character states simply represent interspecific differences cannot be reasonably entertained if consistency in generic criteria is to be maintained within the family. On the basis of shared characters, it might be argued that *Zanclistius* and *Parazanclistius* are sister groups; the overall body proportions, falcate dorsal fins, fin formulae, and number of vertebrae apparently support this. However, *Parazanclistius* exhibits a number of uniquely derived features, including the depressed nature of the snout and more anteriorly positioned pelvic fins, which must be significant at the generic level, when viewing the family overall. The presence of scales on the opercular and subopercular bones, appears to represent an evolutionary reversal, since no other pentacerotids show this feature. Even *Paristiopterus gallipavo*, which has considerable epithelial covering of the skull bones, unlike the remainder of the family, lacks scales on the opercular bones. On the other hand, the heavier and more rugose development of the occipit with age, and broad rounding of the interorbit seen in *Parazanclistius*, *Histiopterus* and *Evistias* contrasts with *Zanclistius*, in which the occipit becomes hooked and the interorbit deeply medially depressed.

Several other features add support to the considerable divergence that has apparently taken place between *Zanclistius* and *Parazanclistius*. The posterior margin of the anal fin differs in the 2 genera. In *Zanclistius* the anteriormost anal fin rays are longest, the posterior margin being straight (see Hardy 1983: Figure 3A), whereas the posterior margin in *Parazanclistius* is rounded. The two genera differ also in number of lateral line pores (55-65 in *Zanclistius*, 66-72 in *Parazanclistius*), and in length of pectoral fin (2.6-2.9 times in SL in *Zanclistius* specimens ≥ 174 mm SL, 2.1-2.5 times in SL in *Parazanclistius* specimens ≥ 188 mm SL).

In all, such character divergence is comparable with that seen between other pentacerotid sister groups — *Paristiopterus* (2 species) and *Pentaceroopsis* (1 species); *Pentaceros* (3 species) and *Pseudopentaceros* (3 species) (see Hardy 1983).

Parazanclistius hutchinsi sp. nov.

Figure 1; Table 1

Zanclistius elevatus (non Ramsay and Ogilby). McCulloch, 1911, p. 67 (part), figs 16, 18; Maxwell 1980, p. 114 (part), pl. 33.

Holotype

WAM P.25718-001, 188 mm SL, Transit Reefs, Rottnest I. (32°00'S, 115°30'E), speared, R. Bullock, 7-9 m, 6 February 1977.



Figure 1 Holotype of *Parazanclistius hutchinsi*, WAM P.25718-001, 188 mm SL.

Paratypes

Four specimens, all from Western Australia. WAM P.725, 204 mm SL, off Bald I., E of Albany (34°56'S, 118°28'E), Chief Inspector of Fisheries, 25 August 1920; WAM P.16411, 278 mm SL, Bunbury (33°20'S, 115°38'E), speared, J. Lamera, 28 December 1968; NMNZ P.12195 (2 specimens), 196-197 mm SL, Western Great Australian Bight (33°15'S, 124°06'E), 79 m, Engel high lift ground net, *Soela* (S05/81/7), 29 November 1981.

Diagnosis

As for genus.

Description

The following counts and proportions are for the holotype and, in parenthesis, the range for the 4 paratypes. (Measurements and counts of the type specimens are presented in Table 2.)

Table 1 Selected characteristics of histiopterine genera.

	<i>Evistias</i> Jordan, 1907	<i>Histiopterus</i> Temminck and Schlegel, 1844	<i>Zanclistius</i> Jordan, 1907	<i>Parazanclistius</i> gen. nov.
Number of vertebrae	27	24-25	24-25	25
Build of dorsal spines	similar	penultimate spine heaviest	similar	similar
Posterior margin of dorsal fin	rounded	rounded	falcate	falcate
Position of pelvic spine base	immediately posterior to pectoral fin base	below posterior of pectoral fin base	below posterior of pectoral fin base	in advance of pectoral fin base
Condition of opercle and subopercle	exposed	exposed	exposed	scaled
Position of mouth relative to orbit	well in advance	well in advance	well in advance	underneath or just in advance
Development of occiput with increasing age	more rugose, rounded	more rugose, rounded	more rugose, hooked	more rugose, rounded
Development of interorbit with age	broadly rounded	broadly rounded	deeply medially depressed	broadly rounded
Dorsal fin formula	IV-V, 26-28	IV, 23-29	V-VII, 25-29	VI, 25-27
Anal fin formula	III-IV, 11-14	III, 8-10	III, 12-17	III, 13-14

Table 2 Measurements and counts of type specimens of *Parazanclistius hutchinsi*.

	Holotype		Paratypes	
	WAM P.25718-001	WAM P.16411	WAM P.725	NMNZ P.12195
Standard length	188	278	204	197
Head length	67	97	71	72
Snout-vent length	110	168	119	115
Snout length	32	44	31	34
Upper jaw length	24	33	26	25
Width of orbit	23	29	27	26
Least bony interorbital width	17	30	18	21
Posterior of bony orbit to posterior of operculum	22	33	24	21
Snout to base of pectoral fin	70	107	77	76

Table 2 (continued)

	Holotype		Paratypes			
	WAM P.25718-001	WAM P.16411	WAM P.725	WAM P.12195	WAM P.12195	NMNZ P.12195
Snout to base of pelvic fin	62	96	69	65	65	65
Posterior of dorsal fin base to posterior of anal fin base	36	53	39	36	37	37
Length of caudal peduncle	26	39	30	27	29	29
Body width at base of pelvic spine	24	37	28	30	27	27
Body width at base of pectoral fins	29	45	33	36	37	37
Body depth at base of pelvic spines	117	172	123	128	124	124
Body depth at base of first anal spine	118	164	112	125	124	124
Snout to origin of dorsal fin	102	135	109	107	101	101
Length of dorsal fin base	135	180	142	132	134	134
Length of dorsal fin spinous base	44	61	49	49	42	42
Length of dorsal fin soft base	105	140	106	100	106	106
Origin of pelvic spine to origin of first anal spine	63	102	73	70	73	73
Snout to origin of first anal spine	121	195	136	135	133	133
Length of anal fin base	57	78	59	59	59	59
Length of anal fin spinous base	20	26	16	19	23	23
Length of anal fin soft base	41	60	48	45	41	41
Length of pectoral fin	85	110	86	91	94	94
Dorsal ray count	VI, 27	VI, 25	VI, 26	VI, 25	VI, 25	VI, 25
Anal ray count	III, 14	III, 14	IV, 13	IV, 13	III, 13	III, 13
Pectoral ray count	17/17	16/17	18/18	17/17	17/17	17/17
Caudal ray count: principal (procurent)	17(3+2)	17(3+2)	17(3+2)	17(3+2)	17(3+2)	17(3+2)
Pelvic ray count	1,5	1,5	1,5	1,5	1,5	1,5
Vertebrae	13+12	13+12	13+12	13+12	13+12	13+12
Gill rakers	5+17	5+15	5+17	6+16	6+16	6+16
Lateral line pores	66	72	66	71	67	67

Dorsal rays VI, 27(VI, 25-26); anal rays III, 14(III-IV, 13-14); principal caudal rays 17(17); procurrent caudal rays 3+2(3+2); pectoral rays 17(16-18); pelvic rays I, 5(I,5); lateral line pores 66(66-72); vertebrae 13+12(13+12); gill rakers 5+17(5-6+15-17, range 20-22).

Body strongly laterally compressed, dorsal profile broadly rounded before dropping steeply under dorsal fin rays to caudal peduncle; ventral profile flattened, strongly rounded at anal fin base to caudal peduncle; belly keeled; snout-vent 1.7(1.7) in SL; depth at pelvic spine origin 1.6(1.5-1.7) in SL, at first anal spine 1.6(1.6-1.8) in SL; width at base of pelvic spine 7.8(6.6-7.5) in SL, at base of pectoral fin 6.4(5.3-6.2) in SL.

Head broadly covered with rugose, striated bones anteriorly, 2.8(2.7-2.9) in SL; preorbital, circumorbitals, preopercular, and ventral surface of mandible with large sensory pits roofed by membrane; snout very deeply concave, lightly built and somewhat elongate, 2.1(2.1-2.3) in HL; anterodorsal surface of snout and nasal region scaleless; mouth slightly oblique; lips and chin highly villose; chin with 6 large pores, lower jaw ventral margin with several smaller pores; jaws even anteriorly, teeth of both jaws short, conical and slightly curved, set in broad bands anteriorly, bands narrowing along sides; vomer toothless; nostrils close together and equally sized, anterior one with a prominently raised posterior margin, equidistant between eye and snout; interorbit moderately broad, flattened or rounded, 3.9(3.2-3.9) in HL; eyes large, bony orbit 2.9(2.6-3.3) in HL; posterior of bony orbit to posterior angle of opercular 3.1(3.0-3.4) in HL; occipital crest rounded; nape carinate; dorsal fin continuous, base extensive and scaled, 1.3(1.4-1.5) in SL; snout to dorsal origin 1.8(1.8-2.1) in SL; dorsal spines heteracanth, slender, received in a weak dorsal groove, increase progressively in length; base of dorsal spines 4.3(4.0-4.7) in SL; anteriormost dorsal rays long, concave posterior margin; base of dorsal rays 1.8(1.8-2.0) in SL.

Anal fin continuous, base moderately short and scaled, 3.3(3.3-3.6) in SL; snout to anal origin 1.5(1.4-1.5) in SL; pelvic spine to first anal spine 3.0(2.7-2.8); anal spines increase progressively in size, third rather more slender than second; base of anal spines 9.4(8.5-12.8) in SL; posterior margin of anal rays rounded; base of anal rays 4.6(4.3-4.8) in SL.

Caudal peduncle short, moderately deep, 7.2(6.8-7.4) in SL; posterior of dorsal fin base to posterior of anal fin base 5.2(5.2-5.5) in SL; caudal fin scaled basally, slightly emarginate.

Pectoral fin elongate, pointed, 2.2(2.1-2.5) in SL; snout to pectoral fin base 2.7(2.6) in SL.

Pelvic spine fails to reach first anal spine, base in advance of pectoral fin base, fin long and rounded; snout to pelvic fin base 3.0(2.9-3.1) in SL. Lateral line strongly arched from shoulder, peaking under the posteriormost dorsal spine, before dropping more shallowly to caudal peduncle, thence straightening to caudal fin base. Scales small, ctenoid, extensive patches on cheek, above and behind eye, and over opercle and subopercle.

Colour of holotype (in isopropyl alcohol): body generally pale brown, darkening slightly on belly and adjacent to dorsal and anal fin bases; dorsal region of snout, upper lips, sides of lower jaw, and base of chin dark brown; cheeks behind posterior corner of mouth with yellowish sheen; dorsal, anal and caudal fins with indistinctly edged, narrow, darkish bands crossing rays; a prominent, white-edged, black spot on dorsal fin, centred above bases of posteriormost dorsal fin rays; pectoral fins colourless; pelvic fins with greyish-black membrane especially dark distally.

Distribution

Known from south-west Western Australia, from Rottneest Island, to the western extreme of the Great Australian Bight, and apparently also from South Australia (see McCulloch 1911).

Remarks

The only published records of *P. hutchinsi* are those of McCulloch (1911) and Maxwell (1980), who both included the species in their accounts of *Zanclistius elevatus*. McCulloch's figures 16 and 18, of specimens *c.* 140 and 150 mm SL, are both of *P. hutchinsi* and demonstrate the larger pectoral fin (crossing the lateral line), rounded anal fin, advanced pelvic fin, snout profile and mouth position relative to eye in that species. Not all these differences were documented by McCulloch however. In addition, it is not possible to determine which of the several localities listed by McCulloch, yielded examples of *P. hutchinsi*, though it is likely that they were taken from stations in South Australian waters.

Maxwell's (1980) account included a lateral line pore count of 66-68 for *Z. elevatus*. This is likely to have been taken from *P. hutchinsi* specimens, and his colour reproduction (Plate 33) is also of the latter species.

Parazanclistius hutchinsi is named after J. Barry Hutchins of the Western Australian Museum, Perth, in recognition of his contributions to knowledge of the Western Australian marine fish fauna, and his helpfulness in making available to me considerable amounts of study material from time to time.

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References

- Hardy, G.S. (1983). A revision of the fishes of the Family Pentacerotidae (Perciformes). *N.Z.J. Zool.* 10 (2): 177-222.
- Maxwell, J.G.H. (1980). *A field guide to trawl fish from the temperate waters of Australia*. CSIRO, Division of Fisheries and Oceanography, Circular No. 8.
- McCulloch, A.R. (1911). Report on the fishes obtained by the F.I.S. *Endeavour*, on the coasts of New South Wales, Victoria, South Australia and Tasmania, Vol. 1. In: *Zoological Results of the Fishing Experiments carried out by F.I.S. 'Endeavour' 1909-10 under H.C. Dannevig, Commonwealth Director of Fisheries*. Published by Direction of the Ministers for Trade and Customs, Sydney.